Docket No. 741124-79

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)
Michael HERMANN	) Group Art Unit: 2872
Application No.: 09/817,797	) Examiner: Audrey Y. Chang
Filed: March 27, 2001	) Confirmation No. 8356
For: DEVICE FOR QUANTITATIVE ASSESSMENT OF THE ALIGNED POSITION OF TWO MACHINE PARTS, WORKPIECES OR THE LIKE	)

REPLY BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 223 13-1450

Sir:

This Reply brief is presented in furtherance of the Notice of Appeal filed June 17, 2009, in connection with the above-identified application and is in reply to the Examiner's Answer issued May 7, 2010.

Argument.

With reference to the Examiner's positions expressed in the paragraph spanning pages 4 and 5 of her Examiner's Answer, Appellant submits that there are several basic errors contained therein.

First, the examiner's position is based on the contention that, if the "operation principal" for obtaining the relative position of two objects does not change, then it is a simple "obvious matter of design choice" to switch from the known light transmitting apparatus and methods to one using light reflecting apparatus and methods even though the declarations of record provide factual evidence that establishes why it was not obvious to use the reflectivity of the known sensors, and in particular, why it would not be obvious to use

their reflectivity to modify the device of the Hölz patent (see, detailed discussion of the declaration evidence in the Appeal Brief). This evidence has not been satisfactorily rebutted by the examiner who has not provided one iota of evidence as to why it would have been obvious to use the reflective properties of the commercially available optoelectronic sensors in the manner taught by appellant and in the manner set forth in claims on appeal.

In regard to the examiner's reference to appellants disclosure of the availability of suitable commercial availability CMOS sensors, not explained by the examiner is how one skilled in the art would have recognized their suitability for use in a reflective manner despite the evidence to the contrary. Nor has the examiner explained why the ***structural*** changes necessary to go from a device operating on a transmissive principal to that of the claims on appeal operating on a reflective principal while retaining the same basic function. Doe the examiner contend that once an operating principal is known, any and all means for utilizing it become mere obvious design choices?

It is well known that optoelectronical sensors are made of semiconductor materials of a thickness of typically 0.3mm or more. These semiconductors may be, e.g., silicon, germanium, indium sulphide, or indium gallium arsenide (InGaAs) among many others. All of these materials in this thickness have a greyish appearance, similar to that of a metal. CMOS is a common abbreviation for Complementary Metal Oxide Semiconductor. The nature of CMOS sensors as referred to by the examiner and as disclosed in appellant's specification is important especially in the respect that, in order to achieve a two-dimensional measurement, it is absolutely neccessary to use a single element of a few microns in size per pixel so that the surface of a CMOS is nowhere near the smoothness of the optical surfaces of optical quality mirrors or beamsplitters that are highly polished to almost perfection. To the contrary, a CMOS optoelectronical two dimensional sensor has a surface, especially an optically active surface, which is highly structured because there are so many micron-sized pixel elements on the optically active surface. Anybody who has ever looked at a real CMOS optical sensor will note the colorful interference patterns which are clearly visible and exist because of the structure consisting of many pixel elements in the optically active surface of the optoelectronical sensor. This fact is so well known as to be unquestionable and has to be taken into consideration when considering the obviousness of using such sensors in a

reflective mode. It is the above described nature of the optically active surface of a CMOS or other optoelectronical sensor that resulted in the prejudice against using the sensor surface thereof as a reflecting surface (as attested to by the declarants). Only the present inventor overcame this prejudice to arrive at the present invention. The examiner has failed to indicate where it is taught or suggested by the AAPA (or Hölzl) that the reflective capabilities of the known optoelectronic sensors were anything other than a detriment and were sufficient to enable them to be used to provide accurate position determinations in the manner of the present invention so as to rebut the declaration evidence to the contrary.

As for the examiner's assertion that the motivation for her proposed modification is that it would provide the benefit of "a more compact syste." Here again, the examiner has substitute her opinion for evidence. Nowhere does the prior art indicate that switching from a transmissive system to a reflective system would achieve such a benefit; only hindsight use of appellant's disclosure provided such knowledge.

Turning to the examiner's enumerated responses to appellant's arguments, point (1) disregards the fact that Bloch's statements are themselves factual evidence being based on his personal knowledge and experience. Furthermore, the remaining comments presume, without basis, that the reflective properties of existing optoelectronic sensors were recognized to be suitable for use in the claimed context, for which the evidence is clearly to the contrary. Furthermore, the evidence of the extensive use of anti-reflective coatings on optoelectronic sensors is not irrelevant, as the examiner asserts, when viewed in the context of the total absence of any use of the reflective properties of such sensors for any purpose, let alone that of the present invention, i.e., it is factual evidence that supports appellant's position that the suitability of such sensors for use in a reflective capacity was not recognized by those of ordinary skill in the art. As indicated in MPEP § 2145:

> **3. Proceeding Contrary to Accepted Wisdom Is Evidence of Nonobviousness**
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> The totality of the prior art must be considered, and proceeding contrary to accepted wisdom in the art is evidence of nonobviousness. *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986) ....
>
> Furthermore, "[k]nown disadvantages in old devices which would naturally discourage search for new inventions may be taken into account in

> determining obviousness." *United States v. Adams,* 383 U.S. 39, 52, 148 USPQ 479, 484 (1966).

Here, the evidence is clear as to the fact that what the examiner asserts to be obvious is contrary to accepted wisdom and that the accepted disadvantages associated with the reflectivity of known optoelectronic sensors would over discouraged those of ordinary skill in the art from pursuing the course of action that led to the present invention.

Response (2), again, is nothing more that the opinions of the examiner that constitute conclusions that are totally unsupported by any evidence. Moreover, these expression positions treat as known, the fact that the reflectivity of known optoelectronic sensors was recognized to be suitable for use in the claimed invention when the evidence is clearly to the contrary.

Response (3), again, ignores the fact nowhere has the examiner demonstrated that the reflectivity of known optoelectronic sensors was recognized to be suitable for use in the claimed invention when the evidence is clearly to the contrary. The facts which the examiner puts forth as the basis of her rejection are mere general theories that can have no applicability to the present invention when not one piece of factual evidence has been provided by the examiner which would demonstrate knowledge or recognition of the fact that the reflectivity of known optoelectronic sensors was recognized to be suitable for use in the claimed invention or that such knowledge would have led to modification of the Hölz device to that claimed by appellant's, a mere changing in operating principal not dictating the specific device utilizing same when various possibilities exist.

As for response (4), unexplained by the examiner is why stray reflection in the case of transmissive use of a sensor would not also apply to use of the same sensor in a reflective capacity, and again the examiner is substituting her opinion, without supporting evidence, for that of the declaration evidence she is discounting as being irrelevant. Furthermore, this argument, like all others, assumes without basis recognition of by those of ordinary skill int the art that the reflectivity of known optoelectronic sensors would suitable for use in the context of the the Hölz device when the evidence is to the contrary.

In response (5), the examiner tacitly admits that her conclusions are based solely on the mere existence of a suitable commercially available sensor (despite the fact that its

suitability was unknown at the time of the invention) and the assumption that, if the sensor has reflective properties that fact in and of itself would provide "common sense" recognition that those reflective properties would be adequate for use for Hölzl's purpose even though there is no evidence (outside of appellant's disclosure) to indicate that such is the case.

As for response (6), in this case the examiner has substitute her own opinion for what actual inventors working in the art stated the situation to be at the time that the present invention was made. Moreover, the examiner has now made the even more astounding statement attributing to the inventor of the reflective type optoelectronic sensor the realization of an advantage of the reflectance or reflectively of the sensor (see, page 8, lines 11-13) when nowhere is there even the slightest indication that such is the case and where the examiner has been unable to even find one example of the reflectively of such sensor being used for any purpose. One would think that if the advantage of the reflectance or reflectively of optoelectronic sensors was as obvious as the examiner seems to think it is, in the course of the ten years between the issuance of the Hölzl patent and the filing of the present application (let alone the even longer period since the invention of such sensors), at least one example of the use of the reflectivity of sensors could be found for some purpose, yet the examiner has been unable to do so and appellant is unaware of any prior use of an optoelectronic sensor in a reflective capacity as well.

The response number (7) simply misses the entire point of the argument to which it is directed and is merely a reiteration of the examiner's erroneous treatment of the reflectivity of the prior art optoelectronic sensors as being recognized to be of a usable nature. The examiner's position is equivalent to saying that since direct viewing optical telescopes and hand mirrors have been known for hundreds of years, it should have been obvious to Galileo and a simply obvious matter of choice for him to have developed and utilized a reflective telescope instead of the direct viewing optical telescope; however, history has shown this not to be the case.

Conclusion

The examiner's rejection ha s been demonstrated to be improper and contrary to established facts as well as inconsistent with established case law. Therefore, for the above

reasons and those presented in the Appeal Brief, the Board is requested to reverse the appealed rejection.

Respectfully submitted,

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